

**Notice of Allowability**

Application No.

10/065,899

Examiner

Timothy J. Henn

Applicant(s)

RAFFY, PHILIPPE

Art Unit

2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the filing 27 November 2002.
2. ☒ The allowed claim(s) is/are 1-20.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient:
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

  
VIVEK SRIVASTAVA  
PRIMARY EXAMINER

## DETAILED ACTION

### *Allowable Subject Matter*

1. Claims 1-20 are allowed.
2. The following is an examiner's statement of reasons for allowance:

#### **[claims 1-14]**

Regarding claims 1-14 the prior art does not teach or suggest a color convert and enhancer comprising: a first multi-line buffer storing incomplete pixels from an input stream, a luminance generator receiving R, G and B pixels from the first multi-line buffer and generating preliminary luminance values, a second multi-line buffer storing the preliminary luminance values, an enhancer generating enhanced luminance values from the stored preliminary luminance values, a third multi-line buffer storing the enhanced luminance values and a chrominance generator receiving the stored enhanced luminance values from the third multi-line buffer and incomplete pixels from the first multi-line buffer and generating chrominance values from the enhanced luminance values and the incomplete pixels whereby enhanced luminance values are generated and used for chrominance calculation as claimed.

While it is known in the prior art to generate chrominance values using luminance and to enhance those chrominance values using an enhanced luminance value (e.g. Hamilton, Jr. - US 6,542,187), the use of enhanced luminance values and incomplete R, G and B pixel values to create chrominance is neither taught nor suggested. Watanabe (US 2003/0007082) for example teaches conversion of RGB Bayer pattern pixel data directly to YUV (Figure 6, Item 19) but does not disclose the use of enhanced luminance

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values in the process.

**[claims 15-20]**

Regarding claims 15-17 the prior art does not teach a color-space converter/ method for directly generating enhanced YUV pixels from R, G and B pixels in an un-interpolated pattern comprising: receiving and input block of at least 3x3 incomplete R, G and B pixels; determining a pattern type for the input block and selecting a selected coefficient block in response to the pattern type, multiplying the selected coefficient block and summing to generate a preliminary U component the represents an average brightness at a center of the input block, generating and storing preliminary Y components for each pixel location, multiplying an enhancement block of the preliminary Y components by an enhancer coefficient block and summing to generate an enhanced Y component that represents an edge-enhanced brightness at a center of the enhancement block, generating and storing enhanced Y components for each pixel location, reading stored enhanced Y components for locations in the input block and generating an every Y value for the input block from Y enhanced components, reading at least two B/R pixels, generating a U/V component from the at least two B/R and from the average Y vale while ignoring R/B and G pixels respectively from the input block wherein the U and V components represent color of a YUV pixels while the enhanced Y component represents brightness of the YUV pixels and whereby R, G and B pixels in the un-interpolated pattern are enhanced and directly converted to Y, U and V components of YUV pixels without RGB interpolation.

While it is known in the prior art to generate chrominance values using luminance and to enhance those chrominance values using an enhanced luminance value (e.g. Hamilton, Jr. - US 6,542,187), the use of enhanced luminance values and incomplete R, G and B pixel values to create chrominance is neither taught nor suggested. Watanabe (US 2003/0007082) for example teaches conversion of RGB Bayer pattern pixel data directly to YUV (Figure 6, Item 19) but does not disclose the use of enhanced luminance values in the process.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

3. The examiner notes that the parent case (Raffy et al. - US 7,002,627) contains claims with similar limitations to claims 1-20 of the present application. However, since the prior art does not teach the use of modified luminance data to create YUV data from incomplete R, G and B pixels as claimed, the claims of the present case are not be considered an obvious variation of the claims of the Raffy '627 patent.

### ***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following further shows the current state of the art in generating chrominance signals from R, G and B and luminance components:

- i. Hamilton, Jr. et al. US 6,697,107
- ii. Hamilton, Jr. et al. US 6,075,889

The following further shows the current state of the art YUV creation using edge-enhanced luminance values:

- iii. Lin et al. US 6,642,962

The following further shows the current state of the art in imaging systems with progressively smaller storage buffers:

- iv. Suzuki et al. JP 2000-023083 A

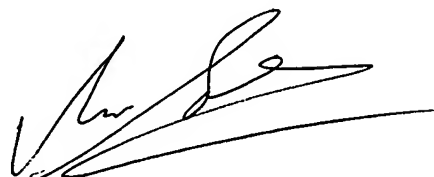
5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Henn whose telephone number is (571) 272-7310. The examiner can normally be reached on M-F 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivek Srivastava can be reached on (571) 272-7304. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TJH  
9/2/2006



VIVEK SRIVASTAVA  
PRIMARY EXAMINER